

Research content for the short video Buildings store CO₂_ Utopia 2023

"Imagine a FUTURE of climate-active BUILDINGS ... that STORE CO₂ in new materials and timber constructions"

Student statement: "This video shows how building with natural materials and modular wood structures could reduce construction waste and collect CO₂ to release into the atmosphere."

Buildings as CO₂ reservoirs

Buildings are currently seen as part of the problem rather than part of the solution to a climate-neutral future. Many building materials such as concrete, bricks, etc. contain a lot of gray energy and thus also CO₂ emissions. More than 10 percent of the climate-relevant emissions in Austria can be attributed to the building sector.

The future image "Building as CO₂ storage" shows the building as CO₂ sink instead of CO₂ emitter. More CO₂ is stored in buildings than is emitted during the production of building materials or the entire construction process. The building becomes climate positive.

Forests and trees store carbon in biomass, for example in wood. When wood is installed in the building, this carbon continues to be stored, provided that the entire timber industry is also managed sustainably, in a cycle. Wood construction is therefore an already existing lever. Through buildings, the raw material wood can be kept in the cycle for hundreds of years.

There is still a big lever in the CO₂-free production of concrete and bricks. With energy efficiency and the use of renewable energies in production, the first step succeeds, the use of CO₂ captured in the industry and the storage in these building materials themselves creates the actual sponge function. The building surfaces (facades & roof) themselves are active, either green or generating electricity & heat.

Research at the site:

Capture of CO₂: <https://www.vtiu-unileoben.at/en/news>

Humus build-up in the soil as a CO₂ sink: <https://www.humusplus.at/>

[Institute for Building Physics TU Graz](#)

[Institute for Timber Engineering & Wood Technology TU Graz](#)

[Institute for Architecture and Civil Engineering](#)

[Holzcluster Steiermark](#)

[BEST - Bioenergy and Sustainable Technologies](#)

Institute for Environmental System Sciences Uni Graz

Protein research for industrial applications: <https://acib.at/de/home/>